Chapter 1
Identify Current Project (Phase I)

The Technical Project Planning (TPP) process is a comprehensive and systematic planning process for identifying project objectives and designing data collection programs at hazardous, toxic, and radioactive waste sites. The TPP process is integral to the program and project management business process, the corporate management approach for managing all U.S. Army Corps of Engineers (USACE) programs and projects.

Reference and overview resources:
- Foreword (pages 1-5);
- Required and Related References (Appendix A);
- Abbreviations and Acronyms (Appendix B);
- Definitions (Appendix C); and
- Outline of TPP Activities (Appendix D).

The four-phase TPP process helps to ensure that the requisite type, quality, and quantity of data are obtained to satisfy project objectives that lead to informed decisions and site closeout. Phase IV efforts to prepare data quality objective (DQO) statements is the culmination of many TPP activities. (Appendix E presents a detailed "crosswalk" from the TPP process to the U.S. Environmental Protection Agency's (EPA's) 7-Step DQO Process, a similar planning tool.[1])

The TPP process should be used when initially planning for any activities at a site (i.e., investigation; design; remediation, operation and maintenance; long-term monitoring), and when planning the next executable stage of site activities where work is already ongoing.

Phase I (see Figure 1-1) activities bring together decision makers and technical personnel to identify the current project and to document both short- and long-term project objectives through completion of all work at a site. The Phase I efforts involve preparing a team information package, determining an overall site approach, and identifying the current project focus for a site.

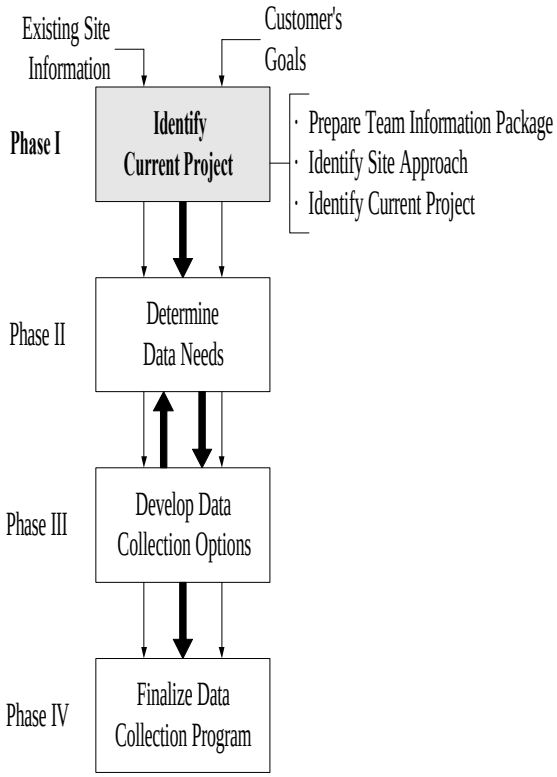

Figure 1-1
Phase I of Four-Phase TPP Process

Although Phase I activities are designed to "front-load" conflicts and decision making, the resultant project efficiency more than compensates for the early commitment to proactive planning and communication. Phase I TPP efforts will ultimately accelerate the protection of human health and the environment, while expediting progress to the desired future use conditions at a site.

1.1 PREPARE TEAM INFORMATION PACKAGE.

Preparation of a team information package should be a result of the initial Phase I activities. A team information package is an informal collection of existing site information that is compiled for reference by the entire team. Common components of a team information package include these items:

- List of individuals who constitute the multi-disciplinary TPP team for the site;
- Customer's concept of site closeout;
- Customer's schedule and budget requirements;
- All correspondence to and from regulators, including an index of the project file or administrative record, if available; and
- Existing site data, reports, illustrations, or drawings (that are available and pertinent).

1.1.1 Identify TPP Team Members.

The TPP process requires a multi-disciplinary team of personnel to represent the planning perspectives of decision-making, data use, and data implementation. The project manager (PM) is responsible for ensuring that all the TPP perspectives are represented within the multi-disciplinary team of personnel. The PM should rely on the functional chiefs or department heads for assigning qualified members to project teams, keeping commitments made in management plans, and ensuring technical processes produce the desired results.[2]

In general, several disciplines of technical personnel will collaborate to represent each of the data user and data implementor perspectives for a site. For instance, a geologist, industrial hygienist, or chemist may support the risk, compliance, or remedy data user perspectives, while also contributing to the sampling or analysis data implementor perspective. On small, relatively simple sites, personnel implementing the TPP process may perform multiple roles and support multiple perspectives.

> The TPP team concept emphasizes the need to have all appropriate technical planning perspectives represented for each project. Even on small, relatively simple sites, the team should at least obtain input from each technical planning perspective during the TPP activities.

1.1.1.1 Decision Makers.

Many perspectives of decision makers are typically associated with a site. The customer, PM, regulators, and stakeholders each have specific interests in the outcome of site-related activities. Decision maker input should be included during all TPP activities, but is most critical during Phases I and IV. The concerns of decision makers should be introduced as early in the planning process as possible, but direct input is required during TPP Phases I and IV.

The most important responsibility of the decision makers is to participate in the team's efforts to identify and document project objectives during Phase I. Other responsibilities of the decision makers include contributing to the team's efforts to do the following:

- Define site closeout;
- Gather existing site information;
- Identify project constraints; and
- Document the current executable stage.

1.1.1.1.1 Customer.

The customer is the person, representing the Federal agency or sponsor, who is funding the project and responsible for completing work at the site or facility. As such, the PM and technical personnel always recognize and respect the customer as the primary decision maker for all site decisions and activities.

Therefore, the customer is a key member of every TPP team. The PM should encourage the customer to participate throughout the TPP activities and understand relevant uncertainties associated with each project.

1.1.1.1.2 Project Manager.
Within the TPP process, the project manager (PM) is the decision maker responsible for leading the team's TPP efforts, progressing towards site closeout, and meeting the customer's expectations. Even in those instances where technical elements, contractors, or stakeholders significantly contribute to a project, the PM remains responsible for maximizing the use of the TPP process.

The PM's leadership role in the TPP process is most apparent during Phases I and IV. During Phases II and III, the PM should function more in a support role by responding to information needs of the technical personnel who are representing data user and data implementor perspectives.

The TPP process supports a PM's implementation of the following requirements of Engineer Regulation 5-1-11[2]:

- PM is primary point of contact with the customer;
- PM manages project resources, data, and commitments;
- PM provides leadership to a multi-discipline project team in accordance with the project-specific management plan developed by the PM, customer, and other team members;
- PM is responsible and accountable for successful completion and delivery of assigned project to customer within established costs, schedules, and quality parameters; and
- PM provides leadership to the multi-disciplined project team with responsibility for assuring that a project stays focused on the customer's needs and expectations; and that the team takes effective, coordinated actions to deliver the completed project.

1.1.1.1.3 Regulators.
Federal, state, and local regulators are the decision makers who may have jurisdictional authority to directly affect site closeout. Regulators may specify standards, criteria, and guidance to be followed during site characterization and remediation. Regulators may also establish schedules under Federal Facility Agreements that can stipulate penalties for missed milestone dates. Regulators with possible jurisdictional authority should be included in TPP efforts to ensure efficient progress to site closeout. In particular, regulator input is prudent during Phase I and portions of Phase IV. As deemed appropriate by the customer, regulators may also contribute during Phase II and Phase III of TPP activities.

1.1.1.1.4 Stakeholders.
Stakeholders with interests in site activities and site closeout could include current property owners, Restoration Advisory Boards, and any number of other individuals or special interest groups. Concerns and ideas of stakeholders should be considered during TPP efforts to contribute to efficient progress to site closeout. Phase I of the TPP process includes a deliberate effort to determine and consider community interests and the perspectives of stakeholders. A Phase IV activity encourages the preparation and distribution of fact sheets, when appropriate, for communicating the data collection program to interested parties including stakeholders. As deemed appropriate by the customer, various stakeholders may also participate during Phase II and Phase III efforts.

1.1.1.2 Data Users.

Data users are technical and other personnel responsible for engineering, scientific, and legal evaluations that are the basis for site decisions. Progress to site closeout requires collaborative involvement of many technical disciplines to represent these data user perspectives:

- **Risk Perspective**
  (evaluates potential risks to human health and the environment);
- **Compliance Perspective**
  (evaluates, monitors, and ensures legal and regulatory compliance);
- **Remedy Perspective**
  (identifies, designs, constructs, operates, and maintains site remediation systems); and
- **Responsibility Perspective**
  (focuses on customer's liability and apportionment of responsibility with other potentially responsible parties).

Some of the technical disciplines who support the data user perspectives include chemists; engineers (e.g., chemical, civil, cost, environmental, electrical, geotechnical, and mechanical); geologists; industrial hygienists; regulatory specialists; risk assessment specialists; and safety officers. Other personnel supporting the data user perspectives include various types of scientists and legal counsel personnel. The nature and complexity of a project dictate the skills, technical disciplines, and personnel needed. All data users participate throughout the TPP process, with their primary efforts occurring during Phase I and Phase II.

1.1.1.3 Data Implementors.

Data implementors are the technical personnel responsible for identifying sampling and analysis methods to satisfy the data users' data needs. Several technical disciplines may work together to adequately represent these data implementor perspectives during the TPP process:

- **Sampling Data Implementor**
  (identifies appropriate sampling protocols); and
- **Analysis Data Implementor**
  (identifies appropriate analytical protocols)

Data implementors participate throughout the TPP process with their primary responsibilities occurring during Phase I and Phase III.

1.1.1.4 Team Selection.

For each site, the team should include the decision makers and the necessary technical personnel to represent all of the data user and data implementor perspectives. In some situations, the PM will need to go beyond in-house resources to obtain the technical personnel experienced or available for all aspects of the work. Technical support from other offices or contractors may be required to ensure all TPP team perspectives are represented for each site. The PM should consider at least the following when identifying technical resources needed for a TPP team:

- Technical specialists from various functional elements (e.g., planning, engineering, occupational safety and health, construction, operations, counsel, contracting) may be appropriate participants for a portion of the TPP activities;
- Real estate personnel should contribute when site efforts involve property not controlled by the customer; and
- The customer may want to assign some of their technical personnel to the team.

> After the team has identified the current project by the end of Phase I, the PM should re-examine the size and capabilities of the TPP team and review both in-house and contractor support requirements.

Under the leadership of the PM, all TPP efforts should be performed by in-house personnel or some combination of in-house and contractor personnel. Once roles and responsibilities are defined, the PM should determine and document the acquisition strategy(ies) for procuring any necessary contractor support. The documentation should include the rationale supporting the acquisition strategy(ies) and the project tasks that have not yet been assigned to either in-house or contractor personnel.

1.1.2 Identify Customer Goals.

Identifying customer goals is a critical and deliberate activity within the TPP process to ensure that the customer's expectations are understood from the start of the planning efforts. A customer's goals should be identified for each site and then documented in the team information package. In order to meet or exceed the customer's expectations, the PM must then ensure that desired project activities, schedules, and budgets are consistent, and in accordance with all applicable regulations.

Customer goals are defined by future land use at the site, regulatory compliance, the customer's schedule requirements, and the customer's site budget.

> It is ultimately the PM's responsibility to understand and monitor the customer's goals and changing needs as additional site information becomes available. The PM is responsible for assessing these changing needs and their effect on project planning and execution.

1.1.2.1 Customer's Concept of Site Closeout.

Site closeout is achieving the "walk away goal," or the final condition of a site, as envisioned by the customer. The development of an effective site closeout statement involves the following considerations.

1.1.2.1.1 Future Land Use.

Future land use assumptions allow site activities to be focused on developing practical and cost effective remedial alternatives consistent with the reasonably anticipated future land use.[3] Although a customer may not have specific future use plans for a site, the PM and technical personnel should at least narrow the range of potential future uses considered for a site. In all instances, initial discussions with the customer should address anticipated future uses of a site to seek the customer's concurrence about future use scenarios (e.g., residential development, landfill construction) that can be eliminated. It is important to recognize that future land use assumptions may be different at sites where a federal agency will not, or does not, maintain control of the affected real estate. Final selection of a reasonable future land use will also require discussions with the customer, regulators, and stakeholders (e.g.; local land use planning authorities; city, state, and federal officials; the public; and current property owners), as appropriate.

1.1.2.1.2 Regulatory Compliance.

A site's current regulatory status [e.g., site/facility listed on National Priority List; Resource Conservation and Recovery Act (RCRA) permitted facility] is also critical to understanding a customer's concept of site closeout. The PM and technical personnel should determine if the customer is aware of any applicable regulatory programs or requirements and obtain copies of related regulatory

correspondence such as a Federal Facility Agreement or a RCRA permit.

1.1.2.1.3 Interim Site Closeout Goals.
An interim site closeout goal (e.g., operable unit closeout; completion of a site investigation phase; operation and maintenance of a remediation system, remediation with five-year reviews) may also be useful to the team. These interim closeout goals are only useful, however, if they are defined within the overall context of the customer's concept of final site closeout conditions.

1.1.2.1.4 Site Closeout Statement.
A site closeout statement should be documented for reference throughout the life of the project. A good definition of site closeout will focus efforts from the current site status and condition through any necessary remediation, operation and maintenance, or monitoring efforts. Site closeout statements should also be revised if the customer's vision for the site changes. A well prepared site closeout statement will increase project efficiency by ensuring:

- The team can visualize the physical appearance of the site at closeout;
- Team members can identify what actions are required to achieve site closeout;
- Phasing and timing constraints associated with site closeout are understood; and
- The customer's intent for operation and maintenance and monitoring are clear.

1.1.2.2 Customer's Schedule Requirements.
Effective project planning requires that the team know all of the customer's short- and long-term schedule milestones to site closeout. The site approach must incorporate and fulfill the customer's schedule requirements and any changes to their requirements throughout the project activities.

1.1.2.3 Customer's Site Budget.
The customer's budget constraints must also be included in project planning. In particular, the team needs to understand the customer's desired investment and the customer's perception of anticipated costs. The site approach must be developed within the customer's budget constraints. If a customer's site budget changes, the changes need to be documented and then communicated to the team.

1.1.3 Gather Existing Site Information.
Identify existing site information and gather the most pertinent data. (Appendix F provides a worksheet for listing any preliminary site information needs identified during this TPP activity.) Existing site information should be compiled and included within the team information package. Not all of the following activities will be conducted as it is dependent upon the stage of site activities and the team's experience at the site.

1.1.3.1 Conduct Preliminary Site Visit.
Technical personnel should consider conducting a preliminary site visit to identify all potential sources of site information. Current and historical photographs of site conditions and operations should be obtained. It may also be beneficial to videotape the site and specific features. Preliminary site visits should be used to obtain site maps or drawings that depict critical site features (e.g., historical land use, buildings, tanks, topography, surface water bodies, property lines, site access, existing well locations, disposal/storage/staging areas, and treatment systems).

1.1.3.2 Gather Site Data and Reports.
So that redundant data are not collected, determine and gather all existing site data and reports for reference and use by the team. Some of the most pertinent data includes:

- Site maps;
- Site and aerial photographs;
- Historical ownership information;
- Regulatory status of the site and facility;
- Facility or site-related geology;
- Hydrogeology, hydrology, climatology, ecology, and demographic information;
- Current and future land use information about areas adjacent to the site;
- Results and reports of previous site studies or investigations;
- Data quality control data (e.g., method blanks and duplicates), data usability information or evaluations, and any supporting data packages (partial or complete); and
- Known influence of other nearby sites.

1.1.3.3 Obtain Operations Records.

Obtain historical operations records about the facility or site to understand site features and possible sources of contamination.

1.1.3.4 Collect Background Literature.

Collect background literature and obtain other general information (e.g., regional geology and hydrogeology; upstream and downstream National Pollutant Discharge Elimination System effluent information; and local newspaper accounts) for use by the team as necessary. Investigations on other nearby sites can often be a source of relevant data.

1.1.3.5 Conduct Site History Interviews.

Discussions with former and current employees about previous operations and waste handling should be planned with input from those representing the responsibility perspective. Employees and personnel interviewed may include individuals involved with site operations, permitting, previous investigations, or environmental and engineering personnel associated with the facility or site. This should include all users of the property, current and past, with the potential for contaminant releases. It is also crucial for the responsibility perspective to be involved to assure proper documentation is prepared and any related substantiation is considered.

1.2 IDENTIFY SITE APPROACH.

Efforts to identify a site approach involve development of an overall strategy for managing a site from its current condition to the desired site closeout condition. These TPP efforts are critical because evolving schedule, financial, political, and other constraints affect site activities from site identification through site closeout. Without a planned site approach, the following situations can occur:

- Data collection plans are modified as a short-term solution to urgent constraints, but may not yield data of the sufficient type, quality, or quantity to enable site or project decisions to be made at required times; and
- A team will not be able to determine the impacts of modifying current project plans in the context of the entire site. This can result in site closeout delays when subsequent site activities deviate from those originally envisioned.

By performing the following TPP activities, the team can identify a site approach and be better prepared to manage and consider the effects of outside constraints and proposed changes to data collection programs. A Phase I memorandum for record (worksheet provided in Appendix F), or a series of specific TPP memoranda, should be prepared to document these critical elements of a site approach:

- Preliminary Conceptual Site Model;
- Project Objectives (worksheet provided in Appendix F);
- Stakeholder Perspectives;
- Probable Remedies; and
- Executable Stages to Site Closeout.

1.2.1 Evaluate Site Information and Data. The PM should rely on individual technical personnel to evaluate the quality, reliability, and usability of existing site information and data. Their evaluation should result in the development of a preliminary conceptual site model and the identification of potential points of compliance.

1.2.1.1 Review Site Information and Data.
Individual team members should be tasked to review all of the existing site information and data for the site. Of particular interest during this review should be the site's physical characteristics; the physical and chemical characteristics of the potential contaminants of interest; and the likely transport pathways. As these select team members begin their review efforts, the PM should clearly communicate the allotted time for conducting this preliminary review of the existing information and data. More exhaustive review and use of the data will begin during Phase II of the TPP process as technical personnel begin to determine the additional data needed at a site. These review efforts should only be preliminary and must be focused to help the team identify the site approach and the current project as described within Phase I of the TPP process.

1.2.1.1.1 Site Physical Characteristics.
Those responsible for preliminary data review will need to become familiar with the physical characteristics of the site (e.g., topographic relief, geologic and hydrogeologic features) and evaluate possible access limitations; proximity of source areas to the ground surface, groundwater, and surface water features; and proximity of a site's source area(s) to other known or potential source areas. Their visual conceptualization may involve site visits and review of site information (e.g., topographic maps, geologic cross-sections, well installation logs, soil boring logs, soil classification data, water quality information, and previous site sampling reports). As their understanding of a site's physical characteristics improve, they may also draft or sketch some initial figures approximating site features.

1.2.1.1.2 Physical and Chemical Characteristics of Contaminants of Interest.
A preliminary data review should consider the physical and chemical characteristics of contaminants of interest. Knowledge of the chemical characteristics will provide insight into their behavior in the environment and their affinity to, or solubility in, media at the site. Information such as solubility, retardation constants, Henry's Law constants, vapor pressure, and molecular weight can be used in conjunction with an understanding of the site's physical features to understand behavior of chemicals (e.g., transport, degradation, persistence) in site media. Variation in detected contamination concentrations should also be noted to preclude invalid assumptions about site contaminant homogeneity.

1.2.1.1.3 Transport Pathways.
Known and suspected source areas should be evaluated, using site characteristics, sampling data from previous studies, and chemical and physical characteristics, to predict possible contaminant transport within various media and the migration of chemicals in the environment. Typical transport pathways could include volatile organic chemical emissions, soil erosion, storm water runoff, sediment deposition, leaching into groundwater and groundwater recharge into surface water. At this point in the TPP process, review personnel may even begin to identify contaminant transport models which might be appropriate for evaluating transport features at a site.

1.2.1.2 Identify Preliminary Conceptual Site Model.

The preliminary review efforts must be sufficient for technical personnel to identify a preliminary conceptual site model (CSM) for a site. A CSM is a written or pictorial representation of the environmental system at a site and the biological, physical, and chemical processes that affect contaminant transport. EPA's Risk Assessment Guidance for Superfund (for human and ecological risk) and the American Society of Testing Materials standard guide for developing a CSM would be useful resources during this TPP activity.[4, 5, 6]

A preliminary CSM would typically be used by a team as a simple model of the relationships between chemicals detected at a site and potential exposure pathways to site receptors. In order for an exposure pathway to be complete, these four elements must be present:

- A source and mechanism of release;
- A retention or transport medium;
- A point of potential contact with the contaminated medium; and
- An exposure route (e.g., ingestion) at the contact point with a receptor.

The review personnel should quickly draw a preliminary CSM for each site. Depending upon the current site setting, it may be appropriate to prepare preliminary CSMs for both human and ecological receptors at a site. In general, the technical personnel who support the risk data user perspective are most experienced with preparing a site's CSM. Once drafted, even a preliminary CSM will help the entire team begin to visually organize all potential current and future exposure pathways at a site, and to identify whether or not they are complete. It should be evident that each distinct source area, exposure route, and receptor relationship will form a separate exposure pathway. A typical site will have numerous exposure pathways that will require further evaluation by the team.

As the team works to identify the site approach and current project, the technical personnel should evaluate what is known about potentially complete and incomplete exposure pathways at a site. If any of the four elements are missing, the pathway is not complete and likely needs no further evaluation. Those exposure pathways known, or suspected, to be complete need to be represented for the team to efficiently proceed with Phase I of the TPP activities.

A preliminary CSM could also be developed for the purposes of evaluating site compliance conditions, planning a removal or remedial action, or evaluating potential contributions to a site by other potentially responsible parties.

1.2.1.3 Identify Potential Points of Compliance.

Having prepared a preliminary CSM for a site, an attempt should be made to identify potential points of regulatory compliance at the site. With assistance from those technical personnel responsible for the compliance data user perspective, the preliminary CSM could be annotated with symbols to represent known or potential points of compliance. Knowledge of at least some potential points of compliance at a site will help the team remain focused throughout the balance of Phase I activities.

1.2.1.4 Designate Media of Potential Concern.

Another result of having prepared a preliminary CSM is that media of potential concern should be very apparent. Those site media directly affected by site contaminants, as well as the transport media and any exposure media, should each be designated as media of potential concern at a site. Knowledge of at least some

of the potential media of concern at a site will help the team remain focused throughout the balance of Phase I activities.

1.2.2 Identify and Document Project Objectives.

Project objectives are the short- and long-term site issues to be addressed and resolved at a site. Satisfying or resolving the project objectives, based on the underlying regulations or site decisions, are the purpose of all site activities. Project objectives must be documented to focus the team's thinking toward a specific set of concerns that can be addressed through the planning and completion of an executable stage(s) at a site. Although identifying and documenting the project objectives for a site can be relatively straightforward since most project objectives are a consequence of the governing statutes and applicable regulations, customer and regulator concurrence on the project objectives is critical. (Appendix F provides a worksheet for documenting and managing project objectives during the TPP process.)

Effective planning can only be accomplished when the regulatory requirements are known and understood by the team. Regulatory requirements serve to establish a framework for site activities. Any legally binding agreements (e.g., Federal Facility Agreements, Interagency Agreements, site orders, permits); applicable or relevant and appropriate requirements; and mandatory schedule compliance dates should be identified and reviewed to establish the direction of proposed site activities. Within the context of the TPP process, the legal and regulatory requirements applicable to a site should be clearly identified as project objectives. Project objectives identified by the team should include only the specific and detailed objectives that must be satisfied in order to progress toward and ultimately reach site closeout.

A TPP team may identify and document as many as 15 basic project objectives associated with the current executable stage of site activities and several optimum project objectives associated with future executable stages. Optimum project objectives will typically be more general than the specific details documented within basic project objectives for a site.

1.2.2.1 Primary Regulatory Processes.

The primary legal processes for most site activities are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly referred to as Superfund), as amended by the Superfund Amendments and Reauthorization Act, and RCRA.[7] Although CERCLA and RCRA contain similarities, data and documentation requirements are different. It is imperative that the team understand which of these laws, or which other laws (i.e., Underground Storage Tank, Toxic Substances Control Act, or State RCRA), will govern site activities to ensure that appropriate requirements are considered.

The procedural requirements of the main governing laws are the promulgated regulations in the Code of Federal Regulations (CFR).[8] Just a few specific examples of the detailed project objectives imposed by some portions of CERCLA include the following:

- *…eliminate from further consideration those releases that pose no significant threat to public health or the environment*, 40 CFR 300.420(c)(I);
- *Determine the general characteristics of the waste, including quantities, state, concentration, toxicity, propensity to bioaccumulate, persistence, and mobility*, 40 CFR 300.430(d)(2)(iii);
- *Determine applicable or relevant and appropriate requirements*, 40 CFR 300.400(g); and

- Evaluate the *degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site*,
  40 CFR 300.430(e)(9)(iii)(D).

Some states also have primacy over (i.e., can implement and enforce) certain federal requirements, such as hazardous waste management under RCRA. In those instances when state programs have more stringent requirements than the federal program, state-specific project objectives should be defined and documented to ensure the appropriate regulations are satisfied. Legal counsel personnel should also be consulted to determine the extent of state authority.

In those instances when a state has implementation and enforcement authority for the site's regulatory program(s), the team will need to determine the standards, criteria, and guidance that are required by the applicable state program. In these situations, the team should define and document the project objectives to ensure the state's requirements are satisfied for the applicable program.

1.2.2.2 Secondary Regulatory Programs. Secondary regulatory requirements include federal, state, or local regulations, and performance criteria or standards to be met during the current or future executable stages. Secondary requirements can dictate that data be collected to perform engineering, scientific, or legal evaluations.

Project objectives associated with secondary regulatory programs are also found in the CFR or other regulatory statutes.[8] A few examples of specific project objectives that are detailed in various secondary regulatory statutes include:

- Clean Air Act
  Determine the specific requirements for handling asbestos during demolition of structures containing asbestos,
  40 CFR 61.145(a);
- Clean Water Act
  Determine required effluent standards for polychlorinated biphenyls for site remedial action waste water,
  40 CFR 129.105; and
- Safe Drinking Water Act
  Determine maximum contaminant levels for inorganic contaminants in groundwater,
  40 CFR 141.11.

As with primary regulatory programs, states may have primacy over secondary federal regulatory programs. Therefore, the team needs to be aware of the potential for additional project objectives beyond federal requirements.

1.2.2.3 Other Project Objectives. Project objectives beyond the primary regulatory process and secondary regulatory programs must also be identified and documented to ensure that all issues and requirements are addressed for a project.

> If the TPP process is initiated during the execution of an ongoing project, it is essential for the team to identify and document project-specific objectives to focus subsequent project activities.

If a customer wants site activities that supplement those associated with the administrative requirements of the primary regulatory processes or secondary regulatory programs, the PM and technical personnel should manage the customer needs by designating specific project objectives for the supplemental activities.

Some data user perspectives may also determine that specific project objectives are needed for some aspects of the work. For example:

- Ecological and human health risk assessments, not adequately addressed by current regulatory programs or guidance, may necessitate that additional project objectives be identified and documented;
- Remedy-specific project objectives may be appropriate and useful for evaluating the suitability of natural attenuation at a site due to the site-specific parameters that would need to be investigated and considered in the design;
- Industry-wide initiatives to identify, collect, and evaluate cost and performance data related to the construction, operation, maintenance, and monitoring of a remedial technology; and
- The responsibility perspective at a site can involve legal counsel efforts to develop a customer's position and litigate apportionment with other potentially responsible parties at a site.[9, 10] These legal counsel considerations may result in unique project objectives for each element of responsibility determination. For example, position development for a customer may require a detailed search of ownership records or waste disposal data associated with another entity.

1.2.3 Identify Regulator and Stakeholder Perspectives.

The customer, with support of the PM and the technical or legal personnel in some cases, needs to solicit and monitor the perspectives of both the regulators and stakeholders during the TPP process to ensure their needs and concerns are understood. Both the site approach and current project should consider regulator and stakeholder perspectives that exist at a site.

1.2.3.1 Determine Regulator Perspectives.

After determining the primary regulatory process, applicable secondary regulatory requirements, and all related project objectives, the perspectives of the regulators should be obtained regarding these decisions and the related project objectives. Regulators, as possible decision makers who affect progress to site closeout, must be consulted to gain their participation in the TPP process and team and to understand and consider their expectations relative to a site. Efforts to determine regulator perspectives should not be taken lightly or overlooked. Well planned and timely meetings with the regulators early in the TPP process will contribute to the success of the planned project and the efficiency of progress to site closeout.

1.2.3.2 Determine Community Interests.

Determine the status of any current or former community interest associated with the site.[9] Community interest input can contribute to project success and efficient progress to site closeout.

1.2.4 Define Probable Remedies.

If a site is still in an investigation stage, probable remedies should be defined so the overall site approach is consistent with the most likely remedial alternative should remedial actions be necessary. The team will want to consider all remedies potentially appropriate for a site. Whenever possible, the team should consider specific remediation technologies (e.g., soil vapor extraction, landfill cover) that may be applicable to a site if remediation is necessary. However, in some instances, the team will only be able to consider a general type or category of remedial technologies (e.g., containment, collection and removal, soil treatment) when available site information and environmental data is limited.

If the customer's goal is no further action, then probable remedies likely need not be identified. In this situation, the team should document that the remedy data user perspective is not participating because of the customer's vision of site closeout.

When defining probable remedies for a site, the team should consider both presumptive remedies and innovative technologies that may be suitable for site conditions.

1.2.4.1 Presumptive Remedies.

Presumptive remedies are preferred technologies for common categories of sites, based on remedy selection and implementation experience. The team will find that a suitable presumptive remedy can do the following:

- Accelerate the planning process;
- Provide consistency in remedy selection;
- Reduce the remediation schedule and expenditures; and
- Achieve earlier site closeout.

Note that the team's consideration of a presumptive remedy should not preclude their consideration of an innovative technology, should an innovative technology prove to be as effective or superior to a presumptive remedy.

1.2.4.2 Innovative Technologies.

As stated in Section 300.430(a)(1)(iii)(E) of the National Contingency Plan, *USEPA expects to consider using innovative technology when such technology offers the potential for comparable or superior treatment performance or implementability, fewer or lesser adverse impacts than other available approaches, or lower costs for similar levels of performance than demonstrated technologies.* Therefore, it is important that utilization of innovative technologies be considered for both site characterization and remediation during TPP efforts. Numerous sources of innovative technology are available and a team should seek input from several technical sources regarding application experience with specific innovative technologies that may be viable for a site.

1.2.5 Identify Executable Stages to Site Closeout.

All possible executable stages to site closeout should be identified by the team. The scope of an executable stage can be thought of as the site activities scheduled to occur between milestones along the critical path timeline of site activities. Executable stages should be designated from the unfulfilled administrative requirements of the applicable primary regulatory process (e.g., CERCLA, RCRA) and secondary regulatory programs (e.g., Clean Water Act, Clean Air Act). Agreements, permits, and orders should also be reviewed as they may include requirements for particular work items or data compilations, as well as consultation and schedule obligations. The team must also identify the project objectives that correspond to each executable stage through site closeout.

> Once project objectives have been identified, technical personnel should evaluate and determine if the site is already eligible for closeout. If enough data of an acceptable quality already exist to satisfy all project objectives to site closeout, then the PM and technical personnel should assist the customer in petitioning the regulators for site closeout and delisting, as appropriate.

Depending on the size and complexity of the site, several executable stages may be necessary and appropriate to proceed from the current site status and condition to site closeout. Only after all executable stages for a site have been

identified can the team identify the current project for completing the first executable stage of site activities.

> Even if a customer only requests services for a single executable stage, it is appropriate to identify all executable stages and corresponding project objectives through site closeout. With knowledge of at least some future project objectives, the team may be able to offer the customer some significant cost savings by meeting data needs of subsequent executable stages when their collection can be cost effective and a good business decision for the customer.

1.3 IDENTIFY CURRENT PROJECT.

After developing the overall approach for managing a site from its current condition to the desired site closeout condition, a team can work to identify the current project for a site. By identifying the current project, a team can formulate a detailed strategy for completing the current executable stage of site activities. Identification of a current project will also focus team efforts during TPP Phases II, III, and IV.

Due to the inherent complexity of identifying the current project, the PM and technical personnel must obtain input from the customer, regulators, and other stakeholders as appropriate. The PM should consider leading some working team meetings as a means of promoting concurrence among the decision makers.

1.3.1 Recognize Site Constraints and Dependencies.

Existing site information should be reviewed in the context of the overall site approach to identify site constraints and dependencies that may affect project planning and execution. Team members involved in identifying the site approach should contribute to recognizing constraints and dependencies and their potential effects on the anticipated site activities. In particular, problems or constraints discovered during preceding work at the site should be identified. These efforts should at least include consideration of administrative, technical, legal and regulatory issues.

1.3.1.1 Administrative Constraints and Dependencies.

The PM should identify any constraints or dependencies associated with differences between the anticipated level and duration of efforts required to satisfy the project objectives and the availability of various technical personnel on the team.

The PM should also identify any funding constraints that may affect project execution. The team should be informed when funding for site activities is available and what levels are programmed for the next several years. Project execution options should be developed in line with funding obligations and within all funding limitations.

The team should consider whether site investigations or subsequent remedial actions will require access agreements, real estate easements, or acquisition of property. In instances where offsite contamination is known or suspected, the team will want to carefully research real estate acquisition needs. The team should recognize that site constraints and dependencies may be associated with the legal documents used for real estate access agreements, temporary easements, and property acquisition. For example, specific-use purposes established within a temporary permit should be recognized as site constraints and dependencies during TPP efforts.

In those instances when other potentially responsible parties may be involved, the PM should specifically request that legal counsel personnel identify which work may be performed at a site. Legal counsel should also direct the team through any legal determinations of liability, defenses, and allocation requirements.

1.3.1.2 Technical Constraints and Dependencies.
Each member of the team should consider technical aspects of site activities that could affect project execution. Unanticipated technical constraints and dependencies may result in ineffective data collection programs, misrepresentation of site conditions, and actions that are unsuccessful or even unnecessary.

The team should be proactive in its efforts to identify any occupational health and safety issues or concerns that present constraint or dependency relationships related to a site.[11] For example, site investigation and remediation activities will require both medical monitoring and health and safety planning prior to all site activities. Occupational health and safety standards must also be addressed in design of site remediation systems to ensure worker safety during both construction and operation and maintenance activities at a site.

> Involve occupational health and safety personnel to assure that any related technical constraints are identified and to properly develop and implement site safety and health plans for site activities.[11]

Examples of other technical considerations that may enable the team to identify site constraints or dependencies include the following.

- Physical considerations would include geographic location; site geology and topography; regional climatology; locations of buildings, structures, pavements, underground or overhead utilities, and streams or ponds; slope stability within a trench or excavation; site access or security restrictions; on-going site activities; and neighboring property uses.
- Temporal considerations may present several climate-related constraints at a site that experiences significant seasonal variations in weather conditions. For example, extensive surface water sampling would be difficult if typical winter weather results in frozen streams or ponds; or biota sampling during a habitat-stressed low flow condition would not be representative of typical site conditions.
- Constraints related to spatial considerations range from issues such as deep groundwater sampling cannot be performed until a deep well is installed, to identifying the presence and location of unexploded ordnance prior to intrusive site activities within areas known to have unexploded ordnance.
- Chemical considerations would include the presence of radioactivity; presence or history of chemical agent testing or disposal; presence of volatile organic chemicals; known or suspected accumulation of methane in a landfill; and oxygen deficiency or hydrogen cyanide accumulation in sanitary and storm sewers.
- Field sampling considerations would include efforts to prevent cross-contamination or the creation of a new contaminant transport pathway; compliance with height or lighting restrictions within flightline areas; sampling effectiveness limited by depth or subsurface geology; vehicle access needs when using some direct push techniques; installation of temporary electrical service to support a

mobile laboratory; and the need to earn regulator agreement for using appropriate field screening and field analytical methods.

- Analytical considerations might include the potential for matrix interferences; sample shipment measures required to meet holding times; laboratory services needed to perform the desired analytical protocols; and the data validation procedures to be employed.

> Timely and proper management of investigation derived wastes must be a constraint and dependency consideration on every site that involves intrusive sampling or remediation activities.

1.3.1.3 Legal and Regulatory Milestones and Requirements.

Legal counsel and a regulatory specialist, either on the team as compliance data users, or supporting the team, should identify site constraints and dependencies related to legal and regulatory milestones and requirements. The most significant regulatory constraints and dependencies will typically involve the primary regulatory process for a site; the applicable or relevant and appropriate requirements; and any agreement, permit, orders, or record of a notice of violation. Schedules and compliance dates established within RCRA permits, Federal Facility Agreements, and other types of compliance agreements; as well as state-specific regulations and guidance; must also be considered when identifying a site's regulatory milestones and requirements. The team must be sure to review any agreements, permits, or orders as they may include requirements for particular work items or technical evaluations, as well as consultation and schedule obligations.

1.3.2 Define Courses of Action for Achieving Site Closeout.

At this step in the TPP process, the TPP team may find a brainstorming meeting very useful for defining options for achieving site closeout. Although the discussions that follow provide examples of typical project execution options, it is important to recognize that several options to achieve site closeout may be combined into a single executable stage. For example, it may be beneficial to simultaneously start investigation and remediation activities at a site. In these instances, two options for achieving site closeout (i.e., investigation and removal action activities) are combined into a single executable stage of site activities. Efforts to define project execution options should consider at least these following typical project execution options.

1.3.2.1 Operable Units/Exposure Areas.

Designation of operable units or exposure areas at a site can be very useful for managing a complex site. Operable units are typically associated with suspected source areas or affected media at a site. Exposure areas are typically areas at or adjacent to a site that include a related group of exposure pathways, involve a common receptor, and can be easily identified on the preliminary CSM. The team's designation of operable units or exposure areas will typically promote more focused site activities and accelerate progress to site closeout for both the operable units or exposure areas and an entire site.

1.3.2.2 Expedited Removal.

Given that significant volumes of data now exist at many sites, expedited removal is another execution option that warrants serious consideration. Removal actions (time critical or non-time critical) and interim remedial actions, or interim corrective measures, can be taken anytime during the CERCLA or RCRA process.

Removal activities include source reduction or removal; access control (e.g., capping, fencing); provision for an alternative water supply; or even temporary relocation of residents. Regulator participation in both considering and planning removal actions, interim remedial actions, and interim corrective actions is critical during TPP efforts.

> A well designed removal action or interim remedial action can end up being the final remedial action at a site if all legal requirements are satisfied and the work is adequately protective.

1.3.2.3 Phasing (Series or Parallel).
A common project execution option to be considered by the team is phasing site activities concurrently or consecutively. Each stage of project execution, whether planned in series or parallel, corresponds to several specific project objectives selected for each executable stage. Multiple phases can also be combined or conducted in parallel if the team believes that it can satisfy the project objectives of multiple project phases during a single executable stage. Parallel phasing of project activities involves planning for concurrent activities at a site. For example, a team may consider a removal action concurrent with remedial investigation sampling.

1.3.2.4 Field Screening and Field Analytical Methods.
Field screening and field analytical methods can be a useful tool to characterize site contaminants while reducing analytical costs. The team could plan to conduct some field screening activities concurrent with TPP efforts during Phases I, II, or III to refine their understanding of a site prior to design of a data collection program for the current executable stage of site activities.

1.3.2.5 Expedited Site Characterization.
Expedited site characterization (ESC) is an execution option that also merits consideration during the TPP process. Use of an ESC approach utilizes in-field decision making, dynamic work plans, and real-time data acquisition and interpretation.[12] ESC expects a multi-disciplinary team to plan a data collection program and then the same key personnel implement the program in the field.

Dynamic work plans used by the team in the field offer some decision logic in advance of field activities, including sampling that is directly contingent on the findings of earlier sampling. Dynamic work plans empower the team to decide on-site to modify field efforts as site conditions are better understood during data collection efforts. Dynamic work plans can only be successful if the entire team agrees with the plans and the plans include when and how communications will occur between field personnel and the customer, regulators, and stakeholders, as appropriate.

ESC approaches can be effectively used at both small and large sites; involve any media of interest at a site; and for all types of investigations, removal actions, and remedial actions that. For example, an ESC approach involving a site with potentially contaminated groundwater would first typically focus on the hydrogeologic portion of a site's conceptual site model. A second phase of ESC field work then focus on the chemical contaminant portion of the conceptual site model.

> Although ESC has several similarities to the TPP process, the entire TPP process should be used to develop a data collection program that uses ESC approaches where appropriate.

1.3.3 Document Current Executable Stage. Within the TPP process, the current project that the team focuses on consists of at least the first executable stage of site activities and the corresponding project objectives. In order to select project objectives for the current project, each project objective must first be correlated with an executable stage of planned site activities (see Project Objectives Worksheet provided in Appendix F). Project objectives should be listed in chronological order and then grouped in relation to desired executable stages of site activities. The team should designate project objectives for each executable stage by grouping them so that they can be achieved within site constraints and dependencies. By grouping project objectives relative to executable stages of site activities, the team will understand the sequence and timing of project objectives to be satisfied through site closeout.

Once the team has selected project objectives for the first executable stage, they have completed identification of the current project and can document the current executable stage by listing the corresponding project objectives as the "basic" project objectives. The team should document the current executable stage by renumbering all project objectives to represent the planned sequence as well as clearly differentiate between those project objectives associated with current and future executable stages at the site. The project objectives associated with future executable stages are classified as the "optimum" project objectives. Project objectives that do not lead to site closeout are classified as "excessive," unless clarified and then adequately related to either the current or future executable stages.

In all instances, obtaining the customer's and regulators' concurrence on all project objectives is critical before proceeding with TPP activities.

Efforts to document the current executable stage of site activities may be iterative. As a team works to sequence and group the project objectives, it may need to further refine the project objectives and possibly identify additional project-specific objectives to ensure that all issues are addressed during the project.

> The current executable stage of site activities may involve satisfying as many as 15 project objectives. Future executable stages will typically involve satisfying optimum project objectives that are more general than those documented as basic project objectives for a site.

1.4 COMPLETE PHASE I ACTIVITIES.

1.4.1 Finalize Acquisition Strategy. A step in completing Phase I is finalizing the acquisition strategy(ies) that will be implemented to obtain the technical personnel needed to perform the balance of the TPP activities. Although the acquisition strategy must be finalized to proceed with the TPP process, the acquisition strategy should also be reviewed, refined, and modified as appropriate during the life of the project.

The PM should update the acquisition strategy identifying the most suitable contracting option for performing the TPP activities based on the scope; schedule; manpower constraints; availability and accessibility of in-house or contractor resources during subsequent project activities at a site; and other technical considerations related to the site. At this step in the TPP process, the PM should be able to confirm that the acquisition strategy(ies) is appropriate or revise it as necessary.

Note that the PM should also refer to other guidance for specific information regarding the procedures for developing, implementing, and revising the acquisition strategy(ies).

1.4.2 Initiate Scope of Work Sections.
The PM should rely on support from technical personnel to initiate introductory-type scope of work (SOW) sections, or work plan components, as appropriate. In general, PMs should consult applicable SOW guidance and rely on input from technical personnel. Typical SOW sections to initiate during completion of Phase I TPP activities include:

- Site Background (e.g., site location and history; previous studies and results; regulatory history and authorities);
- Project Planning Overview and Objectives (e.g., site approach, current project description, project objectives for the current executable stage); and
- Project Management (e.g., schedules, submittals).

1.4.3 Prepare Phase I Memorandum for Record.
At this step in the TPP process, a Phase I memorandum for record (MFR) should be prepared to document the team's findings and decisions during Phase I (see Appendix F for a Phase I MFR worksheet). The PM and technical personnel should reference portions of the previously prepared team information package, preliminary conceptual site model, and listed project objectives as components of the MFR. The MFR should clearly document the current project and associated project objectives within the context of the overall site approach for the current executable stage of site activities. The MFR should clearly indicate the customer's goals (i.e., concept of site closeout, schedule requirements, and site budget), as well as site constraints and dependencies.

In accordance with the applicable quality management plan, the PM should have independent technical or management personnel review the Phase I MFR to ensure it is effective and complete.

The PM should distribute a MFR to all team members after completing Phase I activities. A well developed MFR can be used to document project planning objectives and focus the team's efforts throughout TPP Phases II, III, and IV. The Phase I MFR should be a stand-alone document attached to the site-related Project Management Plan. A complete Phase I MFR can help to ensure that institutional site knowledge is transferred to new people involved with a site.